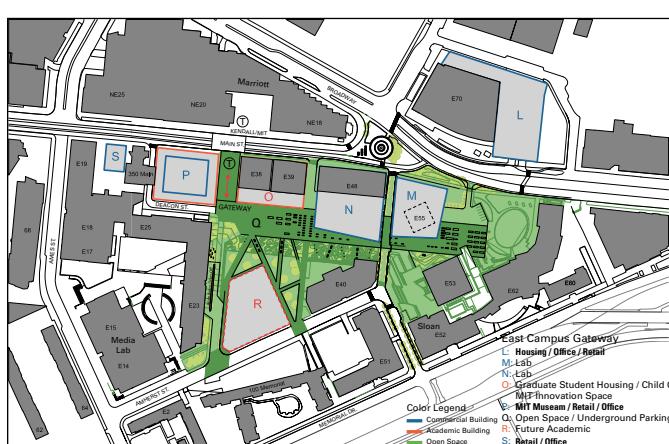
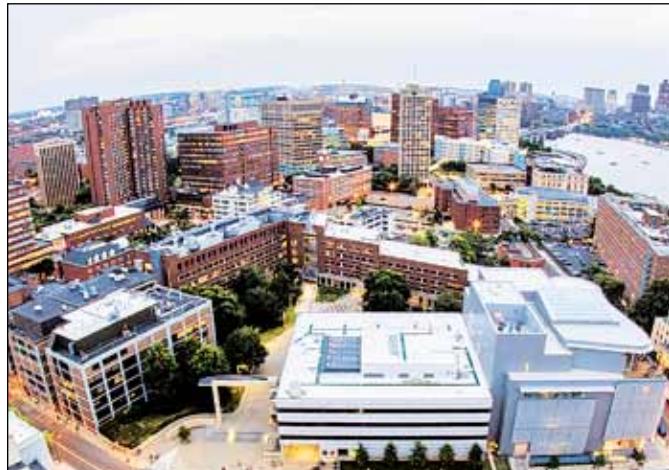




Kendall redevelopment proposal



TOP: TAMAS KOLOS-LAKATOS; BOTTOM: MIT NEWS OFFICE
MIT's current thinking on the proposed plan for Kendall Square, as of July 14, 2014. At the top is an aerial view of the East Campus/Kendall Square area which is the locus of the proposal. At the bottom is a map of the proposed changes to the area, which calls for new buildings for commercial, retail, and academic uses, as well as new graduate student housing.

Financial aid tune-up targets upper-middle-class applicants

Policy change hoped to make MIT more 'competitive'

By Leon Lin

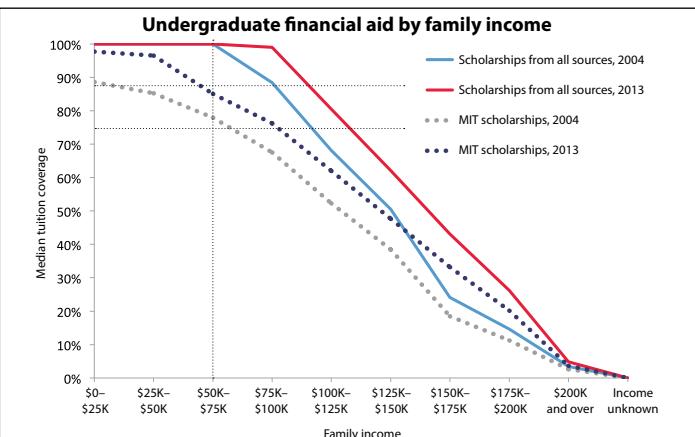
NEWS EDITOR

Tired of losing students to schools like Harvard, Princeton, Stanford, and Yale, this year MIT tweaked its financial aid formula to sweeten the deal for undergraduates from families making \$100,000 to \$150,000.

The MIT Student Financial Services office cited those four schools as offering more generous aid than MIT in that range, which Provost Martin A. Schmidt PhD '88 called MIT's "least competitive" income bracket.

"We don't want a student who wants

Financial aid, Page 11



SOURCE: MIT STUDENT FINANCIAL SERVICES, VIA THE PRELIMINARY REPORT OF THE TASK FORCE ON THE FUTURE OF MIT EDUCATION

Summer classes try digital tools

Educational experiment gets mixed reviews from students

By Katherine Nazemi

While researchers were running experiments in MIT labs this summer, the Institute was conducting an educational experiment of its own, piloting for-credit summer classes through the "summer@future" initiative.

Five courses were offered, from the physics, biology, materials science, and mechanical engineering departments. As an incentive for students,

MIT offered free housing and tuition for anyone who enrolled in a summer course. A total of 129 students registered.

Courses ran for eight weeks, from June 9 to August 1, but planning for summer@future began much earlier.

"The idea initially stemmed out of discussions in the Task Force on the Future of MIT Education," said Professor Karen E. Willcox PhD '00, Chair of the Task Force Working Group on

MIT Education and Facilities for the Future.

President L. Rafael Reif asked the Task Force to recommend "possible experiments and pilot programs" that would both "incorporate online learning tools" and "[maximize] the value of face-to-face learning for both faculty and students."

Summer@future fits these goals by

Summer, Page 10

Waitlist sees use again, 3 years later

Admissions yield inches slightly higher as nearly 1,050 enroll

By Shenghao Wang

For many, the wait was over. But 28 students who held out months longer than everyone else this year finally received welcome news from MIT: they were admitted from the waitlist.

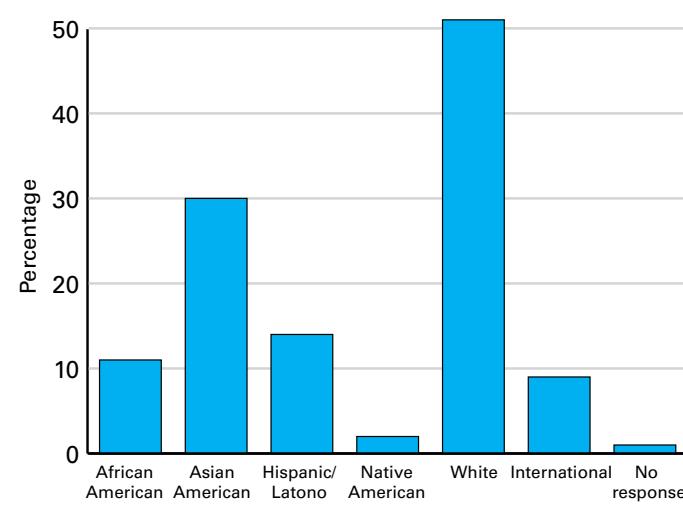
Of those 28 students, 25 are enrolling in the fall. In the preceding two undergraduate admissions cycles, no students were accepted from the waitlist.

In total, MIT currently expects to enroll 1,047 students in the Class of 2018, or 72.4 percent of the 1,447 students accepted, who themselves make up 7.9 percent of the 18,357 applicants. (These figures differ slightly from those in earlier reports because of waitlisted students, students who decide to take a gap year, and other factors.)

Based on these numbers, this year's

Class of 2018, Page 11

Class of 2018 racial composition



INFOGRAPHIC BY JUDY HSIANG

Economics professor to assume DOJ post

Nancy L. Rose PhD '85, a professor of applied economics at MIT, has been named Deputy Assistant Attorney General for Economic Analysis by the U.S. Department of Justice.

Rose is an expert on firm behavior in imperfectly competitive industries and regulatory

economics. At the DOJ, she will head a team of economists in the Antitrust Division, which works to prevent monopolies and promote economic competition.

Rose joined MIT's faculty in 1985 through the Sloan School of Management, and has been a faculty member in the Department



MISS OUT ON COMIC-CON?

Check out our debriefing and photos **p. 6-7**

IN SHORT

Summer housing is ending. If you do not have a fall housing assignment, you must move out of your summer housing assignment by August 10. If you have a fall housing assignment, you can check into your assignment starting Tuesday, August 12. You must complete your move by Thursday, August 14. Any student who remains in their summer housing as

signment after these dates will be charged a \$595 late check-out fee.

Undergraduate students can start registering for Quarter 1 PE classes on Wednesday, Aug. 27 at 8 a.m. The registration period ends on Wednesday, Sept. 3 at 1 p.m. Sign up early to get the classes you want!

Send news information and tips to news@tech.mit.edu.

A WORD FROM MENTAL HEALTH

Alan Siegel addresses recent deaths in the MIT community.

OPINION, p. 4

CONFUSED ABOUT BOYHOOD?

See our take on this lauded new film.

ARTS, p. 5

OM NOM NOM

See our tips for making the most of Restaurant Week. **ARTS, p. 5**

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Atlanta hospital admits second American with Ebola

ATLANTA — The North Carolina missionary who contracted the Ebola virus while working in Liberia arrived in Georgia on Tuesday and joined another aid worker in the specialized isolation ward of a hospital here.

Emory University Hospital admitted the missionary, Nancy Writebol, early Tuesday afternoon, after she was flown to Georgia aboard a private air ambulance that landed at a military base northwest of Atlanta. She arrived at the hospital in a motorcade that included an ambulance and an array of police vehicles. Onlookers crowded a nearby skywalk, and television news helicopters recorded footage that showed Writebol being pushed into the hospital on a stretcher.

Emory said that Writebol and Kent Brantly, a doctor who was working for the relief organization Samaritan's Purse in West Africa, where Ebola has killed more than 800 people in recent months, were being treated in a unit built 12 years ago to isolate and care for patients with especially threatening infectious diseases.

Bruce Johnson, the president of SIM USA, the Christian group with which Writebol is affiliated, said at a news conference that he had been told she was "very weak" but improving.

In a statement from Emory about Writebol's admission, the hospital did not comment on the conditions of Brantly or Writebol, who are believed to be the first two people ever treated for Ebola at a hospital in the United States. Their admissions have drawn widespread scrutiny, and Emory doctors and public health officials have repeatedly countered speculation that Brantly and Writebol could easily infect others in the United States.

Ebola is transmitted through contact with bodily fluids, and the people assisting Brantly and Writebol have worn suits intended to prevent contamination.

"We have a specially designed unit, which is highly contained," Dr. Bruce S. Ribner, a specialist in infectious diseases at Emory, said last week.

—Alan Blinder, *The New York Times*

Treasury may close tax loophole to stop corporate relocations

WASHINGTON — The Obama administration is weighing plans to circumvent Congress and act on its own to curtail tax benefits for U.S. companies that relocate overseas to lower their tax bills, seeking to stanch a recent wave of so-called corporate inversions, Treasury Secretary Jacob J. Lew said Tuesday.

Treasury Department officials are rushing to assemble an array of options that would essentially wipe out the economic incentive for the deals, Lew said.

Options are still being developed and no final decision has been made on whether to go forward with administrative action.

"The question is, can we do enough that it will materially change the economics of inversions so that companies will make different decisions," Lew said in an interview. "The things we are looking at look to me like they could very materially change the economics of inversions."

The action comes in the face of a recent increase in U.S. companies reaching deals to reorganize overseas, creating an explosive political issue that Obama has called a lack of "economic patriotism." Investment banks have been counseling companies to pursue such transactions because of the potential tax benefits. Two large U.S. pharmaceutical companies — the drug giant AbbVie, based in Illinois, and the generic manufacturer Mylan, based in Pennsylvania — agreed to such deals last month.

"Time is of the essence," Lew said. "We are looking at a very long list of possible ways to address the issue."

—Julie Hirschfeld Davis, *The New York Times*

WEATHER

Bertha bypasses Boston

By Vince Agard
STAFF METEOROLOGIST

Tropical Storm Bertha is forecast to pass roughly 250 miles (400 km) off the coast of New England today, but its effects will barely be noticeable here at the Institute. The second named tropical cyclone of the 2014 Atlantic hurricane season, Bertha briefly attained hurricane status on Monday. Prior to that, the storm impacted the Dominican Republic and the Bahamas. However, the storm's path has since shifted to the north and east, and it is expected to go out to sea without having any significant impact on the mainland United States.

Extended Forecast

Today: Partly cloudy with a chance of showers and thunderstorms in the afternoon and evening. High 82°F (28°C). Wind NE at 5-10 mph.
Tonight: A chance of showers and thunderstorms early, with winds becoming calm thereafter. Low 63°F (17°C).
Tomorrow: Partly cloudy with a chance of showers or thunderstorms, high 80°F (27°C). Wind N at 5-10 mph.
Friday: Mostly sunny, highs near 80°F (27°C).
Saturday: Mostly sunny, highs near 80°F (27°C).

As Bertha passes to our southeast, the only noticeable effect in the Boston area will be a slight shift in wind direction, with winds out of the northeast during the day on Wednesday.

However, the possibility of showers and thunderstorms will arise independently of the tropical storm as an upper-level disturbance passes over New England this afternoon and this evening.

A second disturbance will reach our region tomorrow, bringing another chance of showers and thunderstorms. High pressure moves into the area on Friday, kicking off a series of sunny days with sea breezes developing in the afternoon.

US diplomacy on Gaza strains ties with Israel

By Mark Landler
THE NEW YORK TIMES

WASHINGTON — When the State Department condemned Israel's strike on a United Nations school in Gaza on Sunday, saying it was "appalled" by this "disgraceful" act, it gave full vent to what has been weeks of mounting American anger toward the Israeli government.

The blunt, unsparing language — among the toughest diplomats recall ever being aimed at Israel — lays bare a frustrating reality for the Obama administration: the government of Prime Minister Benjamin Netanyahu has largely dismissed diplomatic efforts by the United States to end the violence in Gaza, leaving U.S. officials to seethe on the sidelines about what they regard as disrespectful treatment.

Even as Israel agreed to a new cease-fire with Hamas, raising hopes for an end to four weeks of bloodshed, its relationship with the United States has been bruised by repeated clashes, from the with-

ering Israeli criticism of Secretary of State John Kerry's peacemaking efforts to Netanyahu's dressing down of the U.S. ambassador to Israel.

"This is the most sustained period of antagonism in the relationship," said Daniel C. Kurtzer, a former U.S. ambassador to Israel who now teaches at Princeton. "I don't know how the relationship recovers as long as you have this president and this prime minister."

And yet, with public opinion in both Israel and the United States solidly behind the Israeli military's campaign against Hamas, no outcry from Israel's Arab neighbors, and unstinting support for Israel on Capitol Hill, President Barack Obama has had few obvious levers to force Netanyahu to stop pounding targets in Gaza until he was ready to do it. On Monday, the Israeli prime minister signaled that moment had come.

Amid signs it was prepared to wind down the conflict unilaterally, Israel announced it would accept a 72-hour cease-fire, effective Tuesday, and send a delegation to

Cairo to negotiate for a lasting end to the violence.

Even as the White House harshly criticized the Israeli strike on the school, the Pentagon confirmed that last Friday it had resupplied the Israeli military with ammunition under a longstanding military aid agreement.

Obama swiftly signed a bill Monday giving Israel \$225 million in emergency aid for its Iron Dome anti-missile system.

For all its outrage over civilian casualties, the United States steadfastly backs Israel's right to defend itself and shares Israel's view that Hamas is a terrorist organization.

In a world of bitter enmities, the Israeli-American dispute is more akin to a family quarrel.

The White House seems determined to tamp down the latest eruption in tensions. "The nature of our relationship is strong and unchanged," the press secretary, Josh Earnest, told reporters on Monday, pointing to comments by Mr. Netanyahu over the weekend, in which he said, "I think the United States has been terrific."

Muslim minister quits British government over Gaza policies

By Alan Cowell
THE NEW YORK TIMES

LONDON — The fighting in Gaza claimed an unexpected casualty among the British political elite Tuesday when Sayeeda Warsi, the first Muslim to serve in the British Cabinet, resigned, saying the government's "approach and language" in the crisis had been "morally indefensible."

The broadside took aim at Prime Minister David Cameron's refusal to join a chorus of British critics who have labeled Israel's bombardment of Gaza disproportionate and an outrage. Her decision widened fissures within the coalition government and between the government and leading British Muslims, reflecting the emotional impact of the Gaza conflict, which has been relayed in graphic images on television and social media.

The resignation "reflects the unease and anxiety in Parliament and in the country about the U.K. government's present position" on the conflict, said Sir Menzies Campbell, a former leader of the Liberal Democrats, the junior partner in the governing coalition.

George Osborne, the chancellor of the Exchequer who is close to Cameron, called her action "disappointing and frankly unnecessary."

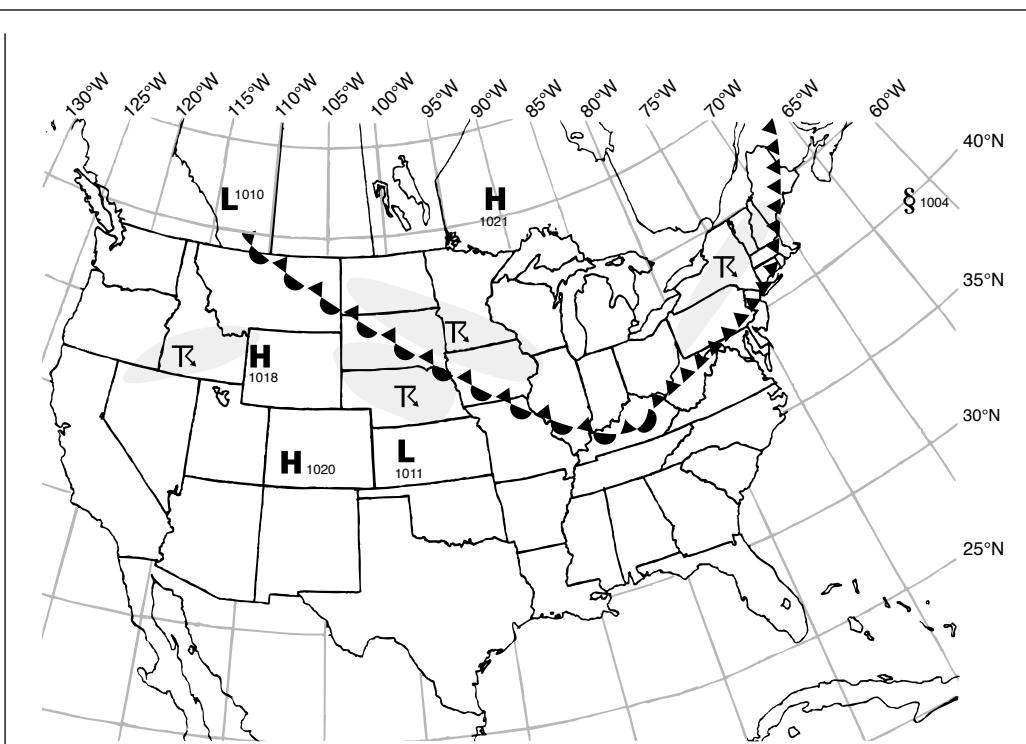
Shuja Shafi, the head of the Muslim Council of Britain, the biggest Muslim umbrella grouping, said Warsi had taken a "principled stand" and had "spoken on behalf of humanity."

Warsi, 43, a lawyer and the daughter of an immigrant textile worker from Pakistan, had been a member of Cameron's Cabinet since 2010 and had been seen as a political bridge to the country's Muslim minority.

In her resignation letter, Warsi said, "My view has been that our policy in relation to the Middle East peace process generally but more recently our approach and language during the current crisis in Gaza is morally indefensible, is not in Britain's national interest and will have a long-term detrimental impact on our reputation internationally and domestically."

Cameron, who has been accused by the opposition Labour Party of being too cautious on the Gaza crisis, was on vacation when news of the resignation broke. In a letter to Warsi released by his office, he said he regretted her departure and realized "that this must not have been an easy decision for you to make."

"I understand your strength of feeling on the current crisis in the Middle East — the situation in Gaza is intolerable," Cameron said.



WEDNESDAY, AUGUST 6, 2014

Putin urges economic retaliation for sanctions

By Neil Macfarquhar
and Andrew Roth
THE NEW YORK TIMES

MOSCOW — Russia should retaliate against the economic sanctions being imposed on the country over the Kremlin's Ukraine policy, President Vladimir Putin said Tuesday. His was the strongest endorsement yet for calls in Russia to ban everything from major Western accounting firms to overflights by European airlines to frozen U.S. chickens.

Putin said that Russia should signal that it finds the economic sanctions offensive, but that it should do so without harming Russian consumers.

"The political tools of economic pressure are unacceptable and run counter to all norms and rules," he was quoted as saying by Russian news agencies.

He noted in a meeting with a local governor south of Moscow that the Russian government had already proposed a number of measures "in order to protect the interests of national manufacturers

of consumer goods," the agencies reported. Dmitry A. Medvedev, the prime minister, was also quoted on Tuesday as saying, "We need to discuss possible retaliatory measures."

The new sanctions imposed against Russia by the U.S. and the EU were prompted by outrage over the suspicion that Russia was continuing to supply the pro-Russian separatists in eastern Ukraine with weapons, possibly including the anti-aircraft missile that was believed to have shot down a civilian passenger jet, killing all 298 aboard. Russia has suggested that Ukraine was responsible.

The government of Ukraine said Tuesday that it would continue to press its offensive against the separatists, and there were reports of shelling and fighting in several suburbs of Donetsk, the main rebel stronghold.

Initially, Sergey V. Lavrov, the Russian foreign minister, reacted to Western sanctions by saying Moscow would not resort to "eye-for-an-eye" retaliatory measures.

Then, in the first significant fallout, a subsidiary of Aeroflot, the

main Russian international airline, said it was halting all flights to Crimea and scrapping its plans to expand its domestic service, because European sanctions effectively ended its leases for Boeing 737-800 aircraft.

In April, a month after Russia annexed Crimea, Putin urged Russians to vacation there and promised subsidized tickets. The Aeroflot subsidiary, Dobrolet, was a main instrument of that policy, with fares from Moscow as low as \$73 each way.

The broadened Western sanctions cover state-owned banks, military hardware, some technology for the energy industry, and entities doing business in Crimea, like Dobrolet.

Japan joined in on Tuesday with its own list of individuals and entities whose assets in Japan would be frozen.

Russia has already taken some retaliatory steps, banning certain food imports, including Ukrainian dairy products, Polish apples, Australian beef, pork from various neighbors and Moldovan fruit.

Russia moves to deport wife of an activist

MOSCOW — Russia's Federal Migration Service on Tuesday moved to deport the American wife of a high-profile human rights lawyer living in St. Petersburg, labeling her "a threat to national security."

Ivan Y. Pavlov, 43, founded the Institute for Freedom of Information Development, which he said strived to make the Russian government more transparent, in 2004. He was one of a handful of activists who met with President Barack Obama on the sidelines of the G-20 summit meeting in St. Petersburg last September.

His wife, Jennifer Gaspar, 43, has lived in Russia for a decade, working for a variety of nongovernmental organizations, including groups focused on human rights issues and one that raised money for the storied Hermitage Museum.

The expulsion order arrived in the mail Tuesday, and Pavlov linked it to a long tradition of forcing government critics into exile. "They know if they expel her it means that I will go with her," Pavlov said in a telephone interview. "I think it is their attempt to push me out of the country."

The move comes amid a darkening climate for human rights organizations here and the worst Russian-U.S. relations in decades. No one from the Foreign Ministry or the Federal Migration Service could be reached for comment late Tuesday. The letter did not specify any reasons Gaspar, from Radnor, Pennsylvania, would be considered a threat. It said only that her residency permit, issued for a year in February, was null and that she had to leave Russia within two weeks of the date the letter was written, July 21. (It took more than two weeks for the post office to deliver it.)

Gaspar called the accusation "absurd" and said that the Russian government was trying to break up a family: The couple married in 2005 and have a 5-year-old daughter. "This is an incredibly inappropriate move on the part of the government to deport the mother of a young Russian citizen," Gaspar said. "We will be fine, but I think the tragedy is in demoralizing the people who are working so hard to do something positive in Russia."

—Neil Macfarquhar, *The New York Times*

US to close three emergency shelters used for migrant children

WASHINGTON — The federal government is shutting down three temporary shelters that had been opened to house a surge of unaccompanied children from Central America entering the United States across the southern border, officials said Monday afternoon.

The shelters at military bases in Texas, Oklahoma and California had provided housing for more than 7,700 children since they were opened in May and June. Tens of thousands of children have crossed the border with Mexico in recent months, sparking a political debate about what to do with the migrant children and how quickly to send them back to their homes in Honduras, Guatemala and El Salvador. But officials at the Department of Health and Human Services, which shelters migrant children while their cases are pending, said the emergency shelters at the military bases were no longer needed.

"We are able to take this step because we have proactively expanded capacity to care for children in standard shelters, which are significantly less costly facilities," department officials said in a statement. "At the same time, we have seen a decrease in the number of children crossing the Southwest border."

Administration officials have said in the last two weeks that the flow of migrant children across the southern border has begun to slow, though they have cautioned that they do not know if the pace might increase again in the coming months.

For now, officials said they no longer need the extra space at the military bases. The shelter at Fort Sill in Oklahoma will no longer be used after Friday, officials said, while the shelters at Lackland Air Force Base in Texas and Naval Base Ventura County in California will be phased out over the next several weeks.

The arrival of the children prompted President Barack Obama to ask Congress for nearly \$4 billion to care for the children while they are here and to process their refugee claims more quickly.

That request became bogged down in politics on Capitol Hill, where Republicans and Democrats quibbled over the amount needed to address the border crisis and about whether to change a 2008 law that provides greater protections to migrant children from countries other than Mexico.

—Michael D. Shear, *The New York Times*

Protesters in Sri Lanka disrupt meeting on civil war missing

COLOMBO, Sri Lanka — Protesters allied with the Sri Lankan government prevented U.S. and European diplomats from leaving a meeting of families of missing people for nearly two hours on Monday.

Shouting slogans about nongovernmental organizations being funded by Washington, the protesters walked into the meeting here about an hour after it had begun. They photographed several activists and families at the meeting, terrifying some family members who were fearful of government retribution.

"You are living lavishly on the U.S. dollars you earn," some in the group yelled at the activists and families, who were campaigning to find out what happened to loved ones who disappeared in the nation's bloody civil war, which ended in 2009.

The meeting brought together families from the formerly embattled Northern province to talk about their experiences before an audience of diplomats and representatives from civil-society organizations. Michael Honigstein, acting deputy head of mission at the U.S. Embassy, was among those present.

"I have seen firsthand the intimidation you face as families of the disappeared," Honigstein told the family members during the disruption by the protesters. "I honor your courage to come forward and share your stories with us." The protesters, who were pushed out of the meeting hall by police officers, blocked the exits for nearly two hours.

—Dharisha Bastians and Gardiner Harris, *The New York Times*

Israeli arrest in abduction of three youths is made public

By Steven Erlanger
THE NEW YORK TIMES

JERUSALEM — Israel arrested a Palestinian last month accused of being the prime mover in the kidnapping and murder of three Israeli teenagers in June, it emerged from court papers on Tuesday. The abduction set off the most recent conflict with Hamas in the Gaza Strip.

The suspect, Hussam Qawasmeh, 40, from the West Bank city of Hebron, was arrested on July 11 in connection with the killing of the three Israelis — Gilad Shaar, Natan Fraenkel and Eyal Yifrach — who were reported missing on June 12 and discovered dead a couple of weeks later.

According to the court documents, Qawasmeh told the police during an interrogation that he had helped organize the kidnappings and had gotten money for the task from Hamas. He also reportedly admitted to having bought weapons and given them to the two other men

who are suspected of having carried out the attack and who are still at large. And Qawasmeh is said to have admitted to helping bury the teenagers in a plot of land he bought a few months before.

The fate of the three teenagers, who attended yeshivas in settlements in the West Bank, seized the nation. After their bodies were found, the suspects' reported connection to Hamas was used to justify Israel's wide-ranging crackdown on the group in the West Bank, with the arrests of scores of people, including the rearrests of some men who had been let go in an earlier deal for the release of a captured Israeli soldier, Gilad Schalit.

The case also prompted the kidnapping of a Palestinian teenager, Muhammad Abu Khdeir, 16, who was beaten and burned to death hours after the funerals of the Israeli teenagers. Three Israelis have been indicted in that case.

The associated crimes set off a cycle of violence that led to weeks of

conflict between Israel and Hamas in the Gaza Strip, and there has been criticism in Israel and abroad that the Israeli government exaggerated the involvement of Hamas in the original kidnapping and murder.

Qawasmeh's arrest was made public on Tuesday in a document from an Israeli court case over whether houses belonging to him and the two other suspects — Marwan Qawasmeh and Amer Abu Aisha, also from Hebron — should be destroyed as a punitive measure. The Israeli Supreme Court had blocked the demolition orders and sought further justification from the state.

Israel identified the two suspects still at large in June; they were said to be Hamas members of long standing. Critics argued that the local Qawasmeh clan might have acted on its own and that it was not clear that Hamas as an organization was behind the kidnapping.

Hussam Qawasmeh was arrested trying to flee into Jordan, the police said.

Japan imposes new sanctions on Russia but keeps a diplomatic door open

By Martin Fackler
THE NEW YORK TIMES

TOKYO — Torn between maintaining solidarity with Washington and keeping a diplomatic door open with Moscow, Japan imposed new sanctions on Russia on Tuesday but kept them more limited than those recently ordered by the United States.

The new sanctions indicate that Prime Minister Shinzo Abe felt he needed to fall in line with the United States, his country's longtime protector, analysts said, especially as he tries to fend off territorial claims by an increasingly powerful China.

Still, Abe appeared to be trying to strike a delicate balance not only by limiting the sanctions, but also by indicating that he had not canceled an invitation to President Vladimir V. Putin of Russia to visit Japan in the fall. Abe has been pursuing warmer relations with Moscow, in part, analysts say, to ensure that Japan does not lose out on Russia's bounty of

natural gas.

"Japan is sending the message that we are not enthusiastic about these sanctions," said Yoshiki Mine, a research director at the Canon Institute for Global Studies in Tokyo and a former high-ranking Japanese diplomat. "Japan needs to show it shares the same values as the West, but it also wants to keep an opening with Russia."

The Japanese sanctions will freeze any assets in Japan belonging to two organizations and 40 individuals connected with Russia's involvement in Ukraine. The people named by Japan had already been targeted by the Americans and Europeans for being involved in Russia's annexation of the Crimean peninsula, or in what the West calls Russian-backed efforts to destabilize eastern Ukraine, according to a government spokesman.

Analysts called the measures largely symbolic since Japan does not import much from Crimea, and

it is unclear how many, if any, assets the targeted people hold in Japan.

The latest round of American and European sanctions against Russia went much further, taking broad aim at the country's banking, energy and military technology industries.

Mine and others said Japan's apparent hesitation over sanctions underscored how Abe was being torn by competing geopolitical goals.

On the one hand, analysts said, Abe wants to avoid falling too far behind the United States and the European Union in punishing Moscow, especially after the downing of a Malaysia Airlines jetliner last month.

But Russia and Japan have new incentives to make a deal, analysts said, over three islands and a group of islets off its northern coast that were occupied by Soviet troops after Japan surrendered in 1945, because Putin has been looking to Asia for customers for Russia's gas and oil, and Japan has been seeking new energy supplies.

OPINION OPINION OPINION OPINION OPINION



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LETTER TO THE EDITOR

Letter regarding recent deaths of MIT community members

Editor's Note: This letter was sent to The Tech shortly after the publication of our last issue.

Dear editors of *The Tech* and members of the MIT community:

In recent days, *The Tech* has reported on the deaths of seven members of the MIT community (including emeriti faculty), and as part of its reporting it has provided information about the causes of death. In three cases, the reported cause was suicide.

All of the deaths are and will be painful to those who knew and loved the departed.

But I write especially to those members of the MIT community who have lost someone they care about to suicide.

With these tragedies, it is natural and normal to have powerful, sometimes puzzling reactions. We question life, ourselves, and life's meaning. In times like this, it's important for us to look after each other, and to pay attention to the thoughts, feelings, and reactions of people we know and care about.

At the foot of this letter, you'll find online resources that many people dealing with suicide have found very helpful. But all of the information in these websites does not match the help that each of us can receive from our friends, families, and colleagues. I encourage you to talk about this with people you know and care for. Certainly the staff at Mental Health and Counseling are available to talk with you in groups and individually, by appointment and more urgently. Please call 617-253-2916 anytime and ask to speak

with one of our clinicians. After hours and weekends, a staff member is available by phone 24/7 for urgent concerns.

Let me finally say that if you are suffering from issues surrounding suicide, you are truly not alone. In the most recent year for which we have data, suicide accounted for 12 deaths for every 100,000 people nationwide, making it the country's 10th leading cause of death. Unlike many other leading causes of death, suicide continues to claim more lives each year. Coming to terms with a given death by suicide is complex and challenging; I urge you, if you are having a hard time or feel confused in any way, to allow the MIT community to embrace you. Because, truly, it will.

Alan E. Siegel, Ed.D
Chief, Mental Health and Counseling Service

Links can be found in the online version of this article.



OPINION POLICY

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Dissents are the signed opinions of editorial board members choosing to publish their disagreement with the editorial.

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Letters, columns, and cartoons must bear the authors' signatures, addresses, and phone numbers. Unsigned letters will not be accepted. *The Tech* reserves the right to edit or condense letters; shorter letters will be given higher priority.

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Three days at San Diego Comic-Con

Navigating signatures, panels, a "Pizza Thrower," and shopping

By Steve Sullivan
STAFF COLUMNIST

After buying enough protein bars, beef jerky, and vitamins to sustain me for three days, I packed away all my food along with a space blanket and some sunscreen. I wasn't going on a camping trip, though. I was headed to San Diego Comic-Con.

San Diego Comic-Con (SDCC) has become legendary in the pop culture world for being the biggest pop culture show you could possibly imagine. At times described as a nerd mecca, SDCC is the result of a multitude of comic publishers, TV networks, movie studios, toymakers, creative talent, and much more all gathering in one place. That place is the San Diego Convention Center — during SDCC, it hosts well over 130,000 people over the course of four and a half days. That's more than ten times the student and faculty population of MIT.

Although I'm not new to the comic convention scene, having attended Boston Comic Con a few times, I was still nervous about SDCC. It has a reputation for congested hallways, long lines that sometimes begin overnight, and fierce competition from other fans to see anything you want to see.

I bought the protein bars because I didn't want to be stuck eating the fast food in the convention center or find myself starving in a long line.

But I was pleasantly surprised by what I was able to see and do at the convention. The convention center houses a massive exhibit hall with rows of large, brightly decorated booths and an upper floor with rooms for panels, screenings, and other large presentations. Outside the convention center, attractions like a giant inflatable Homer Simpson head and a Gotham City-themed zipline towered over lines of convention attendees.

I spent my first day at the convention trying to meet and get signatures from some of my favorite comic book creators. I've started taking a sketchbook to comic book shows to collect signatures and drawings from different creators in one place. I missed seeing some creators because their signings were ticketed — tickets and wristbands that were distributed early in the day. But I was able to meet a few creators who didn't have ticketed signings, such as Stan Sakai, writer and artist of the long-running Usagi Yojimbo samurai comic, who was attending his 36th San Diego Comic-Con. I was also able to see *Teenage Mutant Ninja Turtles* co-creator Kevin Eastman, whom I had met earlier at the 2012 Boston Comic Con. Whereas in Boston I had to wait for over two hours in line to meet him, I only waited around 30 minutes at SDCC.

While SDCC draws some of the comic industry's top talent, the spotlight on them isn't as strong due to the huge movie and

TV presence, so it's not as difficult to see comics creators. Eastman was kind enough to sketch a *Ninja Turtles* headshot in my sketchbook, and we talked about one of his upcoming appearances in Boston. He expressed genuine excitement when I mentioned the upcoming *Ninja Turtles* movie, saying, "It's going to be awesome!" Other autographs I received were from Jeff Smith, creator of *Bone*, and Ed McGuiness, a prominent artist at Marvel.

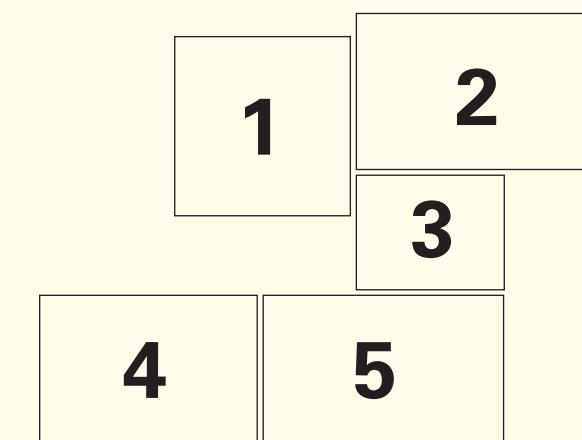
I attended a few panels given by comic artists at SDCC as well. I showed up for a panel by Brian K. Vaughan, writer of the popular *Saga* series, two hours early, expecting some kind of line outside to get in. As it turns out, the arrive-very-early rule for panels only applies to the more popular TV and movie panels — I never had any trouble getting into comic book-focused panels. Usually panels will focus on one or a few creators with a moderator who spends some time driving their conversation on a main subject before opening up the floor to the audience for questions.

Brian K. Vaughan's panel was very different, and ended up being my favorite panel at the convention. He walked into the panel room alone and announced that he would not only be doing nothing but taking audience questions, but also be giving out signed comics, some of which were exclusive variant editions, to anyone who asked a question. After he introduced himself, I heard a loud rumbling behind me and felt the floor vibrate under my feet. When I looked up, a line had already formed from the microphone at the front of the room to the back wall, and was still growing along the sides.

At the PhysicsCentral booth, attendees offered a small stack of comics to anyone who passed by, saying "Free science comics!" PhysicsCentral is a project that aims to bring physics to the younger generation, and one part of their approach is comic books. I spoke with author Rebecca Thompson about how she began her comic and some of her favorite moments her work has brought her.

"I wanted to get people interested in and excited about physics, [but] I didn't want to do classroom teaching. I wanted to have the freedom to do different stuff," said Thompson. Eventually, through work for the American Physical Society, she created the comic book superhero Spectra. "All of her powers are things that lasers actually do... the idea is to get people interested in the story through her life, and then teach them the physics underneath that." Thompson's approach seems to have found some success thus far. "What's really wonderful is when adults will say something and their kids will correct them. And eight-year-olds talking about total internal reflection is just awesome."

The second day of the convention, I set out on a mission to win a shirt. Video games



STEVE SULLIVAN—THE TECH
1. A Joker cosplayer shows off his smile outside the Cinema Makeup School booth.
2. Batman '66 artist Ruben Procopio shows off his illustration skills for fans at DC Comics' booth.
3. Comic Con attendees enjoy some game time on custom-built arcade cabinets at the Behemoth booth.
4. A zombie cosplayer poses with zombie actors at the Walking Dead display.
5. The massive head of the fearsome dragon Smaug glowers at Weta booth passersby with an animated eye.



also had a large presence at SDCC, so many game demos were on display. Super Smash Bros. players could earn a coveted piece of Nintendo swag: an exclusive Super Smash Bros. SDCC t-shirt. To win the shirt, attendees had to win a minigame on the Nintendo 3DS version of the game. They could then enter a match against three other attendees on the Wii U, the winner of which would get a shirt. After waiting in line to play both the 3DS and the Wii U, the players were heavily invested in each prize match, which made the fights some of my most intense convention experiences. I could hear my own pulse pounding in my head when I was finally able to defeat the other contestants by using one of the new Smash Bros. characters, Greninja.

On the last day of San Diego Comic-Con, I did something a little different: I operated a tank that fired pizza. Built to promote the upcoming *Ninja Turtles* movie, the "Pizza Thrower" was set up in the parking lot for Petco Park, a stadium not too far from the convention center. After firing some full-size pizza replicas of *Ninja Turtles* enemies from the seat on top of the turret, I was invited to take a look inside the Pizza Thrower, which reminded me in many ways of an MIT hack. The tank was built off a Toyota Tundra, so the crew was able to drive it around. The pizza-throwing mechanism was a spinning tire on the end of a powerful hand drill. The turret rotated left and right through use of a belt drive with limit switches to keep it from rotating too far. The crew informed me that *Ninja Turtles* stars Megan Fox and Will Arnett visited the site earlier.

I spent most of my last day at the convention shopping for merchandise and looking for gifts for other people. More so than any other comic convention, San Diego Comic-Con is host to tons of exclusive toys, comic book covers, and other exclusive merchandise, which ranges from free swag to items priced in the hundreds of dollars. Exclusives and swag were powerful lures for convention goers, so much so that the owner of one prominent comic distributor, Mile High Comics, complained that convention exclusives were decreasing the amount of business at his comic booth and blamed them for the monetary loss he suffered at the show.

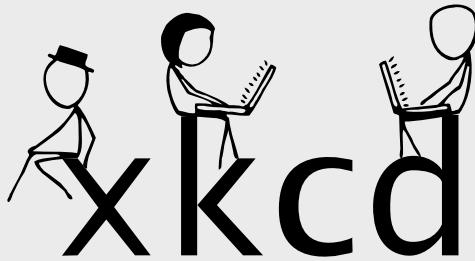
"In a nutshell, the comic publishers with booths at the San Diego convention have so cleverly exploited the greed and avarice of comics fans through limited edition publications that are only available through their own booths, that there is no longer enough disposable income left in the room to sustain us. A sad state of affairs, but also completely true," said company president Chuck Rozanski.

One such piece was a gold-plated "Legacy Dragon Dagger" a toy replica from the *Power Rangers* TV show. You had to stand in a long line just to enter a raffle to win a ticket in order to buy this \$150 dagger. It's true that some con-goers buy some items just to turn an eBay profit. The Dragon Dagger currently has over 75 listings on eBay and is selling for upwards of \$300. I obtained one SDCC exclusive myself — a *Dragonball Z* action figure of the character Vegeta with special coloring from his first appearance on the show.

At the end of each day at SDCC my legs were as sore as they've ever been, but it was worth it to experience a truly unique place where almost everyone was wearing a geeky shirt or costume. I met a lot of cool people, saw exciting booths and events, and brought home hundreds of amazing photographs from the experience. The only thing I would have changed about my experience would have been to go with someone — conventions are more fun when you can experience them with other people and get dragged to a few events you didn't think you would enjoy. However, the nice thing about San Diego Comic-Con is that it guarantees plenty of unique and unexpected experiences no matter where you're headed.

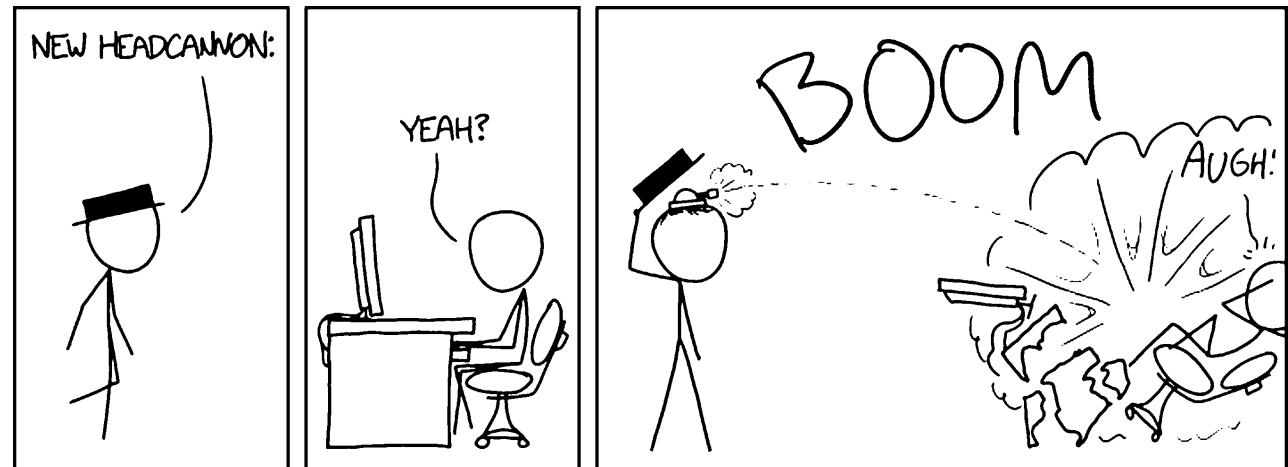


FUN FUN FUN FUN FUN FUN FUN FUN FUN FUN



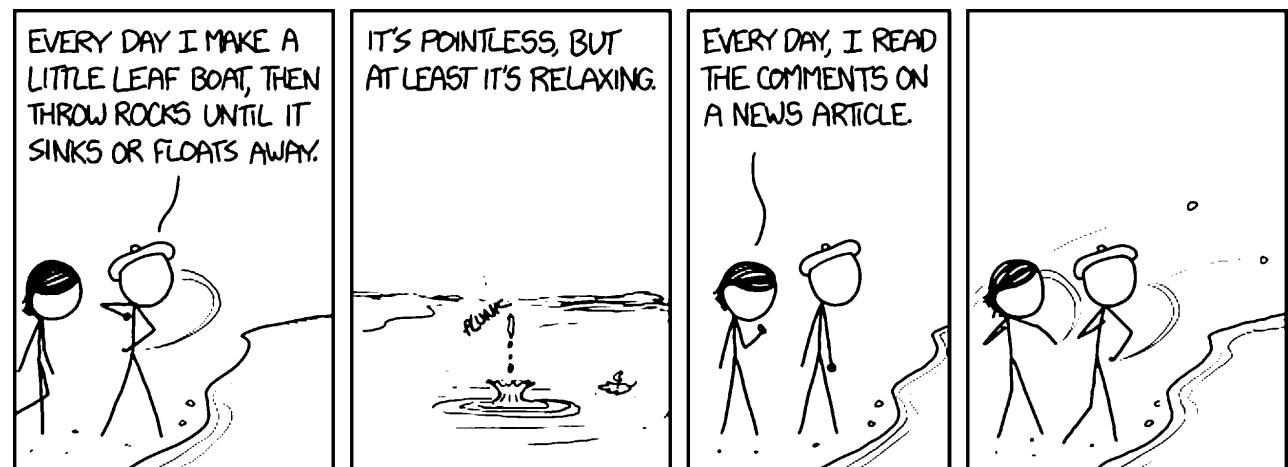
A WEBCOMIC OF ROMANCE,
SARCASM, MATH, AND LANGUAGE
by Randall Munroe

[1401] New



The nice thing about headcanons is that it's really easy to get other people to believe in them.

[1385] Throwing Rocks



PLOOOOSH! Looks like you won't be making it to Vinland today, Leaf Erikson.



by Jorge Cham



JORGE CHAM © 2014

WWW.PHDCOMICS.COM

Appointment Book

by Gail Grabowski

Solution, page 11

ACROSS

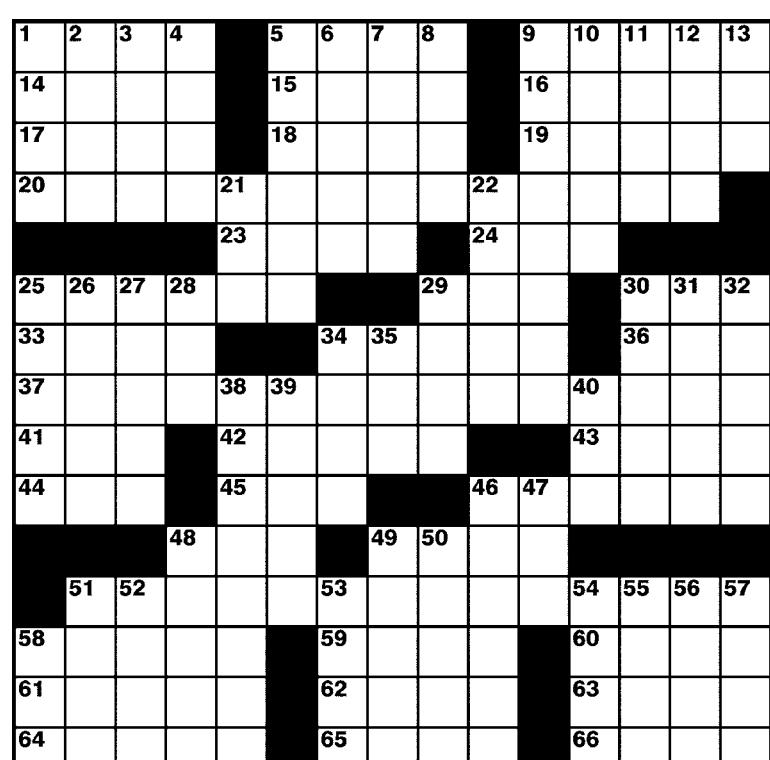
- 1 Hot-springs resorts
- 5 Computer clickers
- 9 Shabby-looking
- 14 Fill-in worker
- 15 In the center of
- 16 Identifier for the 21 Down
- 17 Region
- 18 Was generous
- 19 Agenda listings
- 20 On a treadmill, for example
- 23 Fishing-line holder
- 24 ___ down (disappoint)
- 25 Swear (to)
- 29 Portion of butter
- 30 Mornings: Abbr.
- 33 Knights' titles
- 34 Insurance broker
- 36 Physician, informally
- 37 Staying current
- 41 Historical period
- 42 Is introduced to
- 43 Unlock
- 44 "Spring forward" period: Abbr.
- 45 Crib or cot

- 46 Bulls on a ranch
- 48 Unopened blossom
- 49 Seniors' org.
- 51 Stalling
- 58 Coke competitor
- 59 Opera solo
- 60 Creative notion
- 61 Start up
- 62 Fringe benefit
- 63 Sports defeat
- 64 Informal language
- 65 Observes
- 66 "If all ___ fails . . ."

DOWN

- 1 Top-billed performer
- 2 Where Lima is capital
- 3 Prayer ending
- 4 Reach across
- 5 Refrigerator stick-on
- 6 Mirror reflection
- 7 Courteous
- 8 Biblical garden
- 9 Short dagger
- 10 Continuously bother
- 11 Business boss, for short
- 12 Ten-cent coin

- 13 Football field distances: Abbr.
- 21 Treasury Dept. branch
- 22 Shrub or bush
- 25 Inquired
- 26 Wedding-cake levels
- 27 Pet's reward
- 28 Sixth-sense letters
- 29 Energizes, with "up"
- 30 Cope with change
- 31 Roadside stopover
- 32 Part of a play
- 34 Grew up
- 35 Belly
- 38 "Dinner's on me"
- 39 "___ say more?"
- 40 Small speck
- 46 Frogs' sounds
- 47 Showery spring month: Abbr.
- 48 Washbowl
- 49 Think alike
- 50 In flames
- 51 Banana covering



- 52 Women's links org.
- 53 Afternoon snoozes
- 54 Kitchen-flooring piece
- 55 Fan-club favorite
- 56 Untidiness
- 57 Make less difficult
- 58 Sesame Street broadcaster

Too Hot

Solution, page 10

A partially filled 9x9 Sudoku grid. The visible numbers are:

	7			5				4
	5	9					6	
2		6	3					
7			5	3		8		6
	3						1	
8		4		9	7			3
				2	9			5
	2					6	3	
5				7			8	

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Too Hard

Solution, page 10

A partially filled 9x9 Sudoku grid. The visible numbers are:

	6			4				7
3					2		6	
	7					5	9	
		6			3		7	8
9			6		7			4
7	1		5			6		
	3	7					4	
	4		3					5
6				7			8	

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Too Fast

Solution, page 10

A partially filled 9x9 Sudoku grid. The visible numbers are:

8	4		6			2		
	5	6			7			
9					2			7
			3	9	1	4		
	9						3	
	4	7	6	8				
1			4					6
			2			1	9	
		9			6	2	3	

Instructions: Fill in the grid so that each column, row, and 3 by 3 grid contains exactly one of each of the digits 1 through 9.

Too Cold

Solution, page 10

23+				6+	3
	10+		2÷		6×
5		2÷		12×	
1-	2÷		6		1-
	1-			2	
20×			18×		2

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

Too Soft

Solution, page 10

6x	120x		40x		6x
		6x		6x	
	12x		3		5
24x			12x	2-	4
	5x				6x
3-		24x			

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

Too Slow

Solution, page 10

30x		16+		24x	
		2		30x	
	12x				2-
18x	2		20x		
	100x		5+		6x
24x				2	

Instructions: Fill in the grid so that each column and row contains exactly one of each of the numbers 1–6. Follow the mathematical operations for each box.

Guinea-pig students receive free summer housing

Professor tries out automatically graded fill-in-the-blank proofs in online assignments

Summer, from Page 1

exploring a summer session to give students increased flexibility in completing degree requirements and broadening interests, and by experimenting with digital learning tools.

"It's a chance to experiment with different ways of teaching, particularly more project-based, hands-on, more intensive ways of teaching," Willcox said. "It's also an opportunity to look at ways to infuse online learning and blended learning models into classes."

Proposals were solicited from professors early in 2014. Out of seven proposals received, five were accepted and offered as summer courses. Director of Digital Learning Sanjay E. Sarma and Claudia Urrea PhD '07 managed the program once the call for proposals had been sent.

When the program was announced to students on March 20, the response was overwhelming. "In the first day we had 160 people reply saying they would like to take a class in the summer," Urrea said. In total, summer@future received initial responses from 347 students, and after a selection process in which students each wrote a paragraph detailing their reasons for wanting to take the course, 165 students were accepted.

An optional survey was sent out to students during the application process asking about their motivations for signing up for courses. According to the final report released by the Task Force, 74 percent of students selected "subsidized summer housing," 72 percent selected "exploring a new field," 70 percent indicated that they were "already planning to be in Cambridge over the summer and wouldn't mind taking a summer class," and 60 percent indicated that they wanted the "opportunity to

earn credits at no financial cost." Less common reasons included "advancing towards degree" and "a friend also plans to take the class."

The Tech sat down with professors and students in each of the five classes to find out how they went.

8.371J Quantum Information Science II

8.371, a graduate course in quantum information science, experimented with online problem sets.

"I had observed in this class which I've taught since 2001 that graduate students kept on dropping out of the discussions as the class went on because they would fall further and further behind by having feedback so late in the process," Professor Isaac Chuang '90 said. "They would not realize they'd misunderstood something in the problems sets, and it would catch them in the next lecture, and they'd just turn quiet on you."

In the summer iteration of the course, limited-submission problem sets, lecture videos, and open-ended research questions intended to stimulate student curiosity and class discussion were all posted online. There were, however, trade-offs when working in the online system.

"It took away some things, but it gave some other kinds of things," Chuang said. "I couldn't ask students to prove a theorem because the computer can't check proofs — at least not very well, at least not the kind of hard ones that we have ... But what is interesting is that you can introduce new and different problems which are above and beyond what I could write in a paper problem set."

These "new and different problems" allowed students to construct quantum circuits using a feature of

the MITx platform, and even interact with the system in a symbolic mathematical language.

He also created online proof questions by using a feature of the MITx platform which allows users to drag and drop labels onto images.

"Instead of saying 'prove this,' what I did is say 'fill in these equations and these steps so that the proof is correct,'" said Chuang.

"It makes me a little sad to not be able to give open questions," Chuang said. "On the other hand, because the problem sets were structured, it gave me more time to be unstructured in class ... I let the problem sets take care of more of the technical aspects of teaching, freeing me up as a faculty member to spend more time talking with students about what is actually at the edge of knowledge, and I like that a lot."

One element of the course which has remained unchanged from the semester to the summer version is the final project, which counts for a large portion of the grade and represents students' original work in the field.

Student responses to online problem sets were varied. Some lamented the fact that the online grading system could not give partial credit for questions, since it was only a student's final answer which was input to the system.

"It's nice with problems where you kind of already know the steps and you just do it and get to the answers," said Kevin B. Burdge '15, "[but] on the harder problems it can be a real struggle to just have an input and then have an all-the-points-or-nothing sort of system."

Some students felt that the lack of partial credit came to the detriment of the problems themselves.

"Every problem had to be truly handholding," said Dan S. Borgnia '15, "because the way the submissions worked, they couldn't give you partial credit."

"It's nice to have your whole question graded instantly," Borgnia said, "but it's not as constructive to the learning for you to get, at every single step of the question, feedback saying 'you got that right, you got that wrong.'" More constructive, he said, is when "you play with it for a while, you get it wrong at the end ... and you start understanding 'this part's right, and that part's right,' and that's actually where you learn ... I feel like that's a really crucial part to learning we missed out on."

Graduate student Anand V. Nararajan described the online problems sets as "a good approximation."

"Obviously there are some kinds of questions that you can't do very well on online psets, like proof questions," he said. "I think he still managed to get some of those approximated — there were some questions where you'd have to fill in a lot of numerical things and you'd end up walking through the proof by doing that."

Jordan Ugalde '16 felt that the online problems, which often required numerical answers, didn't allow students to develop "as strong an intuition for the material."

"In my opinion, this is the type of subject in which you would need to derive proofs, do rigorous arguments, do problems where you can get partial credit ... and that type of problem is not facilitated by edX, at least not as it is currently formatted," he said. "Our professor has posted lectures on edX and I found those helpful ... but online psets I do not think are appropriate for the subject."

2.S03 Special Subject: Dynamics I

Since 2.03x had previously been available as an online course, Professor Sanjoy Mahajan wanted to use 2.S03 as an opportunity to explore in-class teaching styles and uses of online material.

"Given that all that material was already there, what could we do with it to improve education? What can we do in the classroom that's different?" he asked.

2.S03 made use of a number of online resources — online problem sets, lecture videos, and office hour videos from when the course was offered residentially. The course's midterms were also taken online, though the final exam was in-class. Some questions were written such that the online problem set checker gave hints if the answer submitted was incorrect.

In designing and teaching the course, Mahajan said his focus was on ways to improve the quality of education both online and in-class.

"All the stuff that's best learned from some kind of reference material" students can learn on their own from digital learning tools," he said. "Instead of writing equations down — I may copy them correctly onto the board, you may copy them incorrectly down into your notes — all of that is now sorted out. Instead, we'll actually use the equations, struggle with them ... increase the contact quality and not lose any of the contact time."

With more of the technical information of the course moved online, Mahajan has tried to use class time to develop students' intuition. But the next step, he said, is to "put more of the intuitive conceptual questions

Classes, Page 11

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Solution to Hot
from page 9

1	7	8	2	5	6	3	9	4
3	5	9	7	1	4	2	6	8
2	4	6	3	8	9	1	5	7
7	9	2	5	3	1	8	4	6
6	3	5	4	2	8	7	1	9
8	1	4	6	9	7	5	2	3
4	8	3	1	6	2	9	7	5
9	2	7	8	4	5	6	3	1
5	6	1	9	7	3	4	8	2

Solution to Cold
from page 9

2	6	5	4	1	3
6	4	3	2	5	1
5	3	2	1	4	6
4	2	1	6	3	5
3	1	6	5	2	4
1	5	4	3	6	2

Solution to Hard
from page 9

2	6	5	9	4	1	8	3	7
3	8	9	7	5	2	4	6	1
1	7	4	8	3	6	5	9	2
4	5	6	2	9	3	1	7	8
9	2	8	6	1	7	3	5	4
7	1	3	5	8	4	6	2	9
5	3	7	1	2	8	9	4	6
8	4	2	3	6	9	7	1	5
6	9	1	4	7	5	2	8	3

Solution to Soft
from page 9

3	6	4	5	2	1
2	5	3	4	1	6
1	4	2	3	6	5
6	3	1	2	5	4
4	1	5	6	3	2
5	2	6	1	4	3

Solution to Fast
from page 9

8	4	7	6	1	3	2	5	9
2	5	6	9	4	7	3	8	1
9	1	3	8	5	2	6	4	7
7	8	2	3	9	1	4	6	5
6	9	1	5	2	4	7	3	8
5	3	4	7	6	8	9	1	2
1	2	5	4	3	9	8	7	6
3	6	8	2	7	5	1	9	4
4	7	9	1	8	6	5	2	3

Solution to Slow
from page 9

5	1	6	4	3	2
1	3	2	6	5	4
2	4	3	1	6	5
6	2	1	5	4	3
3	5	4	2	1	6
4	6	5	3	2	1



The Peculiar Mindset of a GISHHER
Collins M. Perez &

Abstract: Very little is known about the effects on the human body of yearly participation in "GISHWHES". This paper presents a detailed overview of the physiological and psychological changes humans undergo throughout the process of becoming a "GISHHER".

Classes from Page 10

online."

Students seemed to react positively to the online elements of the course, noting differences in the lecture format.

"I really like the hybrid learning," said Kai Aichholz '17. "It lets you get deeper into the technical learning and equations, and then the lectures are more conceptual."

Said Christopher M. Knapp '16, "the idea is good. Watching lectures and doing psets online allows one to ask more nuanced questions during physical lecture, and the redundancy in material also gives the professor the opportunity to go over stickier points and off-topic ideas as he or she sees fit. I think the execution — especially the online portion — still has room for improvement, but it was the first installment, so that is to be expected. Overall, I'd say it was a success."

7.S390 Creating Digital Learning Materials for Biology

In 7.S390, a course offered for the first time this summer, students created their own digital learning tools, each addressing a misconception in the field of biology.

"As MIT students you'll likely have to communicate science to the world in some way in your career in the future, so we want to help train undergrads and even grad students and postdocs if they are interested in the future to communicate science well," said Mary Ellen Wiltrot PhD '09, an instructor of the course along with Nathaniel S. Schafheimer PhD '13 and Sera Thornton PhD '14.

Students worked on a timeline to produce their final projects, first identifying a misconception and specifying learning objectives, then planning and storyboarding their projects.

"Some people are doing assessments, some are doing video, and one person's doing a simulation ... it's fun to see what they're creating," said Wiltrot.

Projects addressed misconceptions about evolution and natural

selection, and the widespread myth that humans use only 10% of their brains, among other topics.

Students taking the course come from a mix of departments, including EECS, Biology, and Biological Engineering. Many created educational videos, but several designed learning sequences on the MITx platform. Students took advantage of features of the platforms to ask different kinds of questions, including multiple choice questions embedded throughout longer readings, problems with boxes for numerical answers, and images and graphs to be labeled by users.

MITx currently allows three methods of assessing open-ended questions: self-assessment, where a user submits a response and receives a rubric to check their answer against; peer-assessment, where three to four other students in the course will grade the submission anonymously; and AI, where the computer will assess a student's submission. Some 7.S390 students used the self-assessment feature to ask open-ended questions, providing users with a rubric of their own design.

In terms of 7.S390's learning objectives, the main idea was that "at the end of the course, [students] would be able to design content based on misconceptions, design teaching materials in ways that are following the best practices, and then extend that to applying the best practices to online material and the online medium," said Wiltrot.

7.S391 Quantitative Biology Workshop

7.S391, led by the same teaching team as 7.S390, evolved out of a workshop-based course typically offered in January.

"It was never an MIT course officially," said Wiltrot. "The biology department ran an outreach program for four or five years, and that program invited graduate students or postdocs or faculty to come to meet the students who were visiting — the students were from universities around the U.S. ... The faculty members would give a talk based on

quantitative biology and something in the field, a bigger picture kind of talk. Then the graduate students and postdocs would come in and do an activity with the students for that day, and a lot of time the projects involved MATLAB or R or Python or PyMOL."

"What changed last year is that we tried to put the workshops on the platform, so that the directions would be there, and every step, there were checks for students," Wiltrot said. Once the content was online, Wiltrot used the summer@future program to offer this course to MIT students. "It seems like students do want that mix of biology and quantitative tools," she said.

The course still involves graduate students leading workshops and talking to students, helping them "understand how what they're doing in class is directly related to the research side," Wiltrot said.

"Pretty much all of our class was online," said Linda Wang '16, "we'd have lecture videos that we'd watch before coming to class, and when we came to class, someone would give a small lecture, but ... we do the exercises online and all of our homework is online."

Since the course is in computational biology, Wang felt that the online medium was useful. "I liked it," she said. "With coding it's hard to do pen and paper stuff."

3.S01 Special Subject: Materials Selection and Design of Nanostructured Catalysts for Sustainable Energy

3.S01 was one of two courses designed from scratch for the summer@future program, the other being 7.S390.

"We took the opportunity of this program being launched to try and do a project-based class that hadn't been taught before," said Assistant Professor Elsa A. Olivetti PhD '07, who taught the course with Assistant Professors Alexie M. Kolpak and Yuriy Roman.

The class focuses on the design of catalyst materials, "in particular for hydrogen generation that would then be used downstream in a fuel cell,"

said Olivetti. Materials are evaluated from a technical perspective, but also from an environmental perspective and an economic perspective.

The online content was developed specifically for this summer, with the teaching team creating new lecture recordings. The course used screen captured lectures to introduce each new topic and interspersed them with comprehension questions. A portion of the course depended on using software tools to design materials.

"The main paradigm we used was trying to see if we could focus the in-class time on using the [software] tools and running calculations," said Olivetti.

When designing the online content and determining the distribution between online and offline material, one of the professor's goals was "taking advantage of the fact that you have this different forum for delivering the content instead of taking the content the way you'd normally deliver it in lecture and then delivering it the exact same way," Olivetti said.

Moving forward

Ultimately, summer@future was an experiment in several directions that still has some kinks to be worked out.

Burdge noted that, in this first iteration, some administrative details such as add/drop dates and potential for using junior/senior P/D/F were not well-communicated.

Said Urrea, "One of the lessons is, if we want to open a summer semester ... registration has to open much earlier, because when we announced [which applications were accepted] in April, students had already decided whether they were going to take UROPs." Students needed to hear back quickly about whether they'd been accepted so they could make housing arrangements, and, if necessary, make arrangements to miss UROP time for classes which were all offered during the workday.

Many of the students *The Tech* spoke with were involved in research or UROPs over the summer and most found it manageable to balance both

a class and a UROP.

Students also expressed a desire to see HASS classes offered in any future summer program.

"I think it would be fantastic if MIT offered HASS classes over the summer," said Burdge, partly because summer HASS classes might allow students to "dive into a HASS class" and also work on a UROP. "If you offer technicals, fine, but just be aware that a full-time UROP with a technical is much less manageable than a full-time UROP with a HASS class," he said.

"It's going to be different for every student," said Willcox, referring to what students will want in any program, "and that's why flexibility is so key — the last thing we have in mind is anything that becomes mandated. It's really about putting options on the table for students."

Was the experiment a success?

Ultimately, said Willcox, "there are many ways success can be measured — if it's progress toward a degree requirement that makes room for something else in the semester, for a UROP experience, or for an extra class; or if it's an extra class that a student takes that they wouldn't otherwise get to take where they acquire a skill outside their major — we think these are all really positive things for students. And on the faculty or educational side: learning, trying new things, even offering a class with a different style of pedagogy which can reach different students. For example, we know that some students love hands-on learning, while some prefer the more traditional lectures. If we can get that kind of variety infused into the curriculum, it makes for this rich educational environment."

Summer@future ... in the future?

"We have to look carefully at how things go this summer, but the indications are that there are a lot of positives there, and if you look solely at the interest from the students, you can see there's a lot of demand," said Willcox. "We think this is something that could continue."

**To increase yield, MIT ups student aid
New policies affect middle class****Financial aid, from Page 1**

to come to MIT deciding to go to somebody else because our financial aid package is so different that it compels them to do that," Schmidt said.

But after speaking to students in that income bracket who were admitted to both MIT and one of its "peers," campus officials found a "measurable difference in the financial aid," Schmidt said. "That difference is a factor in their decision."

In an effort to close the gap, MIT no longer considers home equity on the primary residence when calculating how much financial aid a family needs, provided it earns less than \$150,000 a year.

The threshold prior to the 2014-2015 academic year was \$100,000, according to Schmidt and Student Financial Services, which is headed by Elizabeth M. Hicks.

The change affects 14 percent of MIT undergraduates and will cost the Institute an estimated \$1.5 million, SFS said in a written response to questions.

MIT's need-based undergraduate financial aid budget for the academic year is \$95 million. This figure is down slightly from last year. SFS said that this was in part because an improving economy has made families better able to pay, and that families whose situations did not change are actually receiving more aid. (Tuition has also increased.)

Many colleges do not factor in home equity on the primary resi-

dence when calculating how much a family can pay, regardless of the family's income. Neither does the government's Free Application for Federal Student Aid. Other colleges, like MIT, do consider home equity, but put some restriction on or cap how it's used in the formula.

The rationale? "I might be sitting on some gargantuan home that's already paid for," Schmidt said. "So in theory because I have this huge asset, I could go out and get a home equity loan and use that home equity loan to help pay for part of my child's education."

For the poorest, both MIT and its peers offer full rides. And for the richest, differences between financial aid packages offered by different schools might not matter as much, Schmidt suggested.

But MIT found that its formula had been a "pain point" for households in the \$100,000-\$150,000 range, according to Schmidt, and decided to make the change this year on the recommendation of the Committee on Undergraduate Admissions and Financial Aid.

MIT nudges its tuition up every year, but its commitment to financial aid has increased over time as well. Annual undergraduate tuition and fees net of scholarships (from MIT and others) has fluctuated between \$13,700 and \$20,500 (in 2012 dollars) since the mid-1980s, according to an Institute committee report. The figure was \$17,984 in 2013.

"I think MIT can and should be proud of what it's done to try and make an MIT education affordable," Schmidt said.

Student Center ATM closes

The Citibank ATM found in W20 has been closed as of Friday, July 25. A sign has been placed at the site instructing customers to visit a "full service" branch at 565 Massachusetts Ave. or 200 Technology Square.

According to Citibank's website, transactions are also "free for Citibank customers when they use ... an ATM found at MoneyPass," an ATM-sharing network. As the MIT Federal Credit Union is a member of the network, Citibank customers can make transactions at one of MIT FCU's ATMs without being charged a fee.

MIT FCU ATM locations closest to main campus include Building W20, Building 10, Building E17, and Building 32.

—William Navarre



Padma Lakshmi, host of the television show *Top Chef*, has a discussion with Professor Linda Griffith and Professor Anantha P. Chandrasekaran during a visit to the CGR on Wednesday, June 18. Lakshmi, who suffers from Endometriosis and co-founded the Endometriosis Foundation of America, has been a supporter of the CGR since its inception in 2009.

**Yield rate highest ever
Institute's yield rate beats Princeton's****Class of 2018, from Page 1**

overall yield is the highest in MIT's history, continuing a recent trend of increasing yield numbers. (Last year's yield rate came out to 72.1 percent after the final enrollment dropped to 1,116 students after *The Tech* reported the Class of 2017 yield rate.)

The Class of 2018 is slightly smaller than the Classes of 2015, 2016, and 2017, which were admitted between the opening of Maseeh Hall and the closing of Bexley Hall. These three classes each numbered slightly over 1,100 students.

As for the students who were accepted but ultimately decided to go elsewhere, Schmill said that "Two of the more common choices of schools are Stanford and Harvard."

Many of MIT's peer institutions also posted high yields. Harvard,

Stanford, Princeton, and Yale reported yields of 82 percent, 79 percent, 69 percent, and 72 percent respectively.

The Class of 2018 is 48 percent female and 52 percent male; 25 percent of the class is a member of an underrepresented minority (African American, Hispanic, or Native American); 17 percent are first-generation college students; and 9 percent are international students from 54 countries, according to Schmill.

Furthermore, 11 percent of the class self-identifies as African American, 30 percent as Asian American, 14 percent as Hispanic or Latino, 2 percent as Native American, 51 percent as White, and 9 percent as International; 1 percent did not respond. (The figures add up to more than 100 because respondents could select more than one option.)

Solution to Crossword
from page 8

S	P	A	M	I	C	S	E	E	D	Y
T	E	M	A	I	D	T	A	X	I	D
A	R	E	A	G	V	E	I	T	E	M
R	U	N	G	I	N	P	L	A	C	U
A	T	T	E	S	T	P	A	M	S	S
S	I	R	S	A	E	G	E	N	T	O
K	E	P	U	N	G	U	T	O	D	A
E	R	A	M	E	E	T	S	O	P	N
D	S	T	B	E	D	C	A	T	T	L
A	T	B	U	D	A	A	R	P	C	T
P	L	A	Y	I	N	G	F	O	R	T
E	P	S	I	A	R	I	D	E	A	A
B	E	G	I	N	P	R	K	L	O	S
S	L	A	N	G	S	E	E	S	E	L

A day in the life of a modern-day Power Ranger

The Tech sits down with the current cast of Power Rangers Super Megaforce

By Steve Sullivan
STAFF COLUMNIST

Editor's Note: Some parts of this interview were shortened and edited for clarity.

As a member of the press, I was invited to attend the Power Rangers media suite on the fourth floor of the Omni Hotel across the street from the convention center. Inside a small lounge were displays of several current and upcoming Power Rangers products and the cast of the current show, *Power Rangers Super Megaforce*, whom *The Tech* got to interview.

I found the *Power Rangers* cast members to be very friendly and personable. Throughout the interview, they played off each other's answers to questions and poked fun at one another, showing how close they had come together as a cast while filming the show. One thing that surprised me — although it shouldn't have — is how seriously they take their jobs and how much respect they have for the franchise. They talked about the legacy of the show and how they looked up to Jason David Frank, one of the original *Mighty Morphin Power Rangers*. As goofy as the show can be, it is a career to the actors and a role they deeply care about (and enjoy immensely).

The cast members of *Power Rangers Super Megaforce* are: Andrew Gray as the Red Ranger, John Mark Loudermilk as the Blue Ranger, Christina Masterson as the Pink Ranger, Ciara Hanna as the Yellow Ranger, Azim Rizk as the Green Ranger, and Cameron Jebo as the Silver Ranger.

The Tech: So I guess I'll start with a real general question — how does it feel to be a Power Ranger?

Red: It's pretty psychedelic.

Yellow: Super.

Silver: It's ... it's wild. I mean, there's 21 seasons of this show in the states. There are (a huge number of) rangers, so we're not just part of a TV show. We're part of this giant legacy, you know, so it's an honor.

Red: I feel like it was, uh ... What's that show that you love? Ninja? Ninja warrior? To get to the final end?

Silver: Oh yeah!
Red: We made it. Like that auditioning process, that was like ...

Silver: Brutal.
TT: Was the process physical at all in the way *American Ninja Warrior* is, or was it mostly just acting?

Blue: Acting.
Pink: It was a little physical, not that much.

Green: Maybe it was more Jedi training.

Pink: And it really wasn't that brutal, guys. Come on. It could have been worse.

Green: They ask you to display some kind of martial arts skill in the audition. Then, if you make it in, you go to a two-week training course, like boot camp. They send all these professional stunt teams that are going to be working as your doubles the whole season, to train you in the kind of stage combat that they do.

TT: Wow.
Green: And so we became compatible with each other. We could fight with each other, or with the other stunties, and that allowed us to do a lot of civilian fights.

Red: See, I really didn't go through that — I've just been really close with (show producer) Saban. We're like this.

[Red Ranger makes an intertwined finger gesture, causing everyone to laugh.]

Pink: We're related to him, so we just got the part.

Silver: Nepotism.
Green: No, he got a text.

Red: I sent him an emoji.

Green: "What up, want Red?"

TT: He's like, "You're in." Yeah, I actually thought that was interesting. One of the things I think is most fascinating about *Power Rangers* is that it sort of borrows a lot of footage from the Japanese show, the *Super Sentai* show. So I didn't know how much of the fighting, and things like that was you guys, or the other footage.

Silver: It would vary. The episodes would go between like 15 minutes of extra footage and maybe 5 minutes of extra footage. And any time the helmets are on, those are stunt doubles. Most of the time, those fight scenes are all from Japan. Our stunt doubles do have to reshoot some of those

fights, just to match footage with ... the American versions. American scenes and stuff.

Red: There's a lot of purpose behind that. If we did a double backflip and landed on our neck and broke it, we can't film.

Silver: Oh yeah. Big liability.
Red: Huge liability.

TT: Oh yeah, for sure. Have you guys ever met the Japanese version of you — have you met like the Red Ranger who does that show?

Pink: No, that'd be so cool, though!

Silver: It's completely different! In fact the producer of *Sentai* was here today ...

Green: The owner.
Silver: The guy who's been producing it for 38 years, owning and producing for like 38 years.

Green: Along with *Kamen Rider*.

Silver: And they were like, "Please come to Japan! Please come to Japan!" So we're trying to go there and meet them and see the production in Japan. It'd be very cool.

Green: Those actors out there, they ... I gotta say, I think it's so cool. Those actors out there, they get their hair and makeup done, maybe once, twice, three times. Once they get used to it...then they do their own hair and makeup.

TT: Really.

Green: Yeah. They just come in the morning and they do their own everything.

Green: Which is ... totally foreign to us.

Yellow: Well yeah, it is a foreign country, so ...

Silver: [behind hand]: Especially to the girls.

Green: Well, you guys have quite a face.

Pink: Well, there are times when we're just like, we wish we could do it ourselves, 'cause ... you get tired of somebody poking at your face ... every second.

[Green Ranger pokes Pink Ranger in the face.]

Pink: Aah!
Green: She's biting, but you can't see it on there.

TT: So I think it's funny, that you guys seem like a really tight bunch after working on this show together. Would you say that the

Power Rangers are closer on or off screen? Are you guys a tighter group than the Power Rangers are?

Green: Yeah!

Red: Yes.

Yellow: Well, we lived, worked, and hung out with each other when we were filming in New Zealand. Which, I don't know if any other Rangers did that ...

Pink: No, not all of them.

Green: I know Samurai — they had two houses.

Silver: We became like a family because of it. Of course, in any family, you have your ups and downs.

Red: We also would have functions, like Halloween parties if you missed it or afterwards.

Yellow: [laughs]: Functions.

Pink: Part-ay!

Silver: That might not have all happened if they hadn't all lived together. I lived separately, but kind of with them.

Pink: You lived with us! You were over a lot.

Red: People would come over and be like, we're going to rage at the ranger's house, you know? It was a ranger good time, yeah.

Yellow: I loved it.

Green: The relationships we formed in real life spread on to screen.

Silver: Absolutely.

Green: Hard to compare, right? They bleed a little.

Blue: But there's been moments we would spend ... you know we had to become a family. We spent Thanksgiving together. We spent people's birthdays together.

TT: Cool. Another thing I was wondering about was that it seems that ever since Saban took over the brand again, the franchise has sort of been reinvigorated, and got some of its charm back that wasn't there before.

Green: Yeah, fresh breath.

Yellow: Originality back.

TT: Have you seen any of that change in your show, and have you seen that change in the more recent shows? Has the philosophy of the show changed?

Green: Yeah, I thought when it was with Disney, they added a sense of ... for lack of a better term, realism.

Silver: It was very goofy.

Green: The part of the show that really appeals to me, and I think it appeals to a lot of kids, is that the show's removed. It's not real. You know, the monsters' mouths don't move. They're in rubber suits. We want there to be an element of, you know, I don't need to be afraid. I can just enjoy this and learn about good and evil. And that, I think you get from Saban's years, more than anything. That's how it was with *Mighty Morphin* and that's how it was with all the other seasons that he had before Disney ... We love Disney too, it's fine.

Red: But there doesn't need to be a *Lion King* #5.

TT: Awesome. So I guess the last thing I should ask you guys is, how was it to hang out with Jason David Frank (original 1993 Green Ranger, later White Ranger) and shoot that episode together?

Green: [to the tune of the theme song from the *Lego Movie*]: It was really awesomeeee.

Yellow: It was really cool.

Pink: I mean, who gets to say that?

Blue: It was really surreal. I remember the first thing he said to me. He came on set, and he hugged me. And he says, "One piece of advice. Make sure you go to the bathroom before you put on the suit — see you later."

Red: And just to see him walking around, like, "I haven't worn these spandex in a while. Sucking it in there."

Blue: It was really crazy. It was surreal.

Green: He was funny, man.

Yellow: He was hilarious.

Silver: He's a sweet role model too. He's a family man. He brings his family everywhere with him. He's got an adorable daughter, and a great wife. He's really encouraging. He is kind of like the picture of Power Rangers, you know. He's the quintessential Power Ranger, and so everybody kind of looks up to him, and he fills those shoes very well. He was encouraging to us. He was like, "You guys are incredible. You guys are doing a great job." Just to hear that was like, a breath of fresh air. We're like, "Thank you so much."

Red: And then we're like, "DON'T YOU LIE TO ME."

A comic based on real physics: Spectra

The Tech talks with series creator Rebecca Thompson at San Diego Comic-Con

By Steve Sullivan
STAFF COLUMNIST

Editor's Note: This interview was edited for clarity.

PhysicsCentral is an initiative spearheaded by the American Physical Society to bring physics to the younger generation. To help get kids interested in the subject, Rebecca Thompson, who earned a PhD in physics, created a comic book series featur-

ing a superhero called Spectra. Thompson and others were at the San Diego Comic-Con to promote their series and offer free comics to convention attendees. *The Tech* spoke with Thompson about how she began her comic and some of her best moments with it.

TT: So the first thing I want to ask is, how did this all get started? How did you get into doing comics as sort of outreach education?

Thompson: So my PhD's in physics, and while I was doing that, I realized what I wanted to do professionally was informal education. I wanted to get people interested in and excited about physics. I didn't want to do classroom teaching — I wanted to have the freedom to do different stuff. I started working for the American Physical Society, and they have been wonderful in allowing my department to really explore different and unique ways to get people interested in physics. There was a summer where a whole lot of blockbuster comic book movies were coming out, and we decided to do a comic book about Tesla vs. Edison to mirror that, and it was extremely popular. In 2010, it was the celebration of the 50th anniversary of the first working laser, so we created our own laser superhero Spectra. All of her powers are things that lasers actually do. The idea is to get people interested in the story through her life and her friends, and really hook them with the story, and then teach them the physics underneath that. So all of the characters, everything that you see, is actual physics concepts taught through a story about her life.

TT: What do you see as your main goal right now, with the

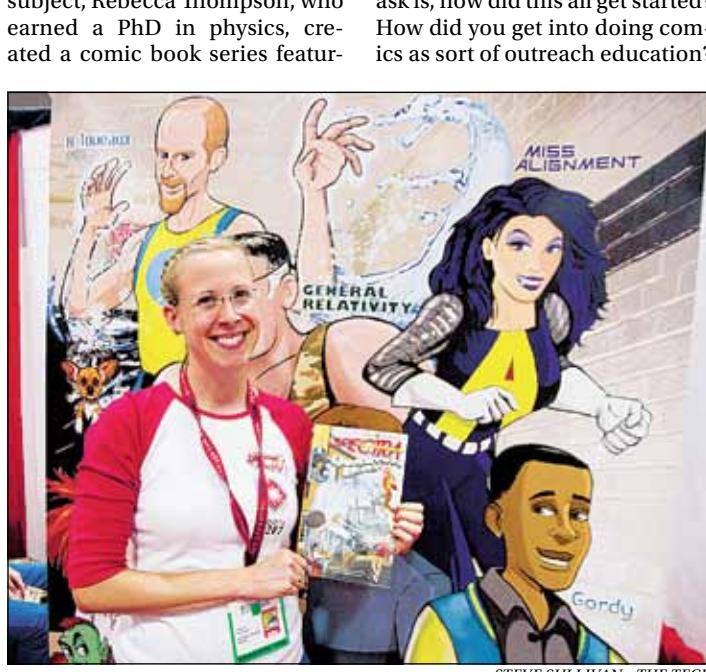
comics? I guess it started as a desire to educate, but are there any more specific goals you're working towards?

Thompson: Mainly we want to get them in as many hands as possible, and also to have people come back and ask us questions. We have an outreach website, physicscentral.com. We're hoping people will read these [comics], and come back and learn vocabulary, and when they go on, that they'll be more comfortable with the idea of physics when they take it in high school and college. The fact that our superhero is a girl was no accident. We really wanted to engage girls in physics, and girls in science in general. One thing we realize, as we see all these little girls walking through here, [is that] they're like, "Wait, is this a superhero for me?" 'Cause so many of the superheroes are men or boys, and this is for them, their age level. And really, going forward, we're hoping to find new and interesting ways to get them into the hands of as many people as possible, and get as many people as possible interested in this. I know both my artist and I would like to figure out how to make them better and more engaging, and more exciting, and just keep upping it. One of the reasons we really like

coming to Comic-Con is [that] we can meet people that do this professionally as well, and talk to them about the art of comic books. You know, we have the physics, and we're learning about the comic books.

TT: You talked about when girls come by and say, "Oh, maybe this is a comic for me." Are there any other moments like that, when you say, "This has been successful, and I've taught people something" or "I've done something good here"?

Thompson: What's really wonderful is when parents come and they say, "OK, my kids just told me ALL about how lasers work and I didn't know this," or when adults will say something and their kids will correct them. Eight-year-olds talking about total internal reflection is just awesome. [They also] talk about potential wells, and laser cooling and trapping. We explain all those at a middle school level. But I think one of the highlights of this was when a mom called us, and said, "I didn't even ask her to do this, but my daughter dressed up as Spectra for Halloween." When all of this started, I said, "The day someone dresses up as Spectra for Halloween, I'm just gonna retire," thinking it would never happen. So the day that happened was really special.



STEVE SULLIVAN—THE TECH

Spectra writer Rebecca Thompson at the PhysicsCentral booth in the exhibit hall at San Diego Comic-Con 2014.